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(54) **RRC MESSAGE TRANSMISSION METHOD IN WIRELESS COMMUNICATION SYSTEM**

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(51) **Int. Cl.**
H04L 1/18 (2006.01)
H04W 36/00 (2009.01)

(52) **U.S. Cl.**
CPC ***H04L 1/189*** (2013.01); *H04W 36/0005* (2013.01)

(58) **Field of Classification Search**
CPC H04L 1/189; H04W 36/0005
USPC 370/328, 338, 331
See application file for complete search history.

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Primary Examiner — Mohammad Anwar

(57) **ABSTRACT**

A Radio Resource Control (RRC) message transmission method and apparatus for a wireless communication system operating in TTI and acknowledge mode is configured to reduce interruption time by minimizing retransmission times of RRC message. The message transmission method for a wireless communication system includes generating, at a transmitter, a message; transmitting the message two or more times consecutively from the transmitter to a receiver; analyzing, at a receiver, the message transmitted by the transmitter; transmitting an acknowledge message or a negative-acknowledge from the receiver to the transmitter depending on the analysis result; and terminating, at the transmitter, a retransmission process of the message upon receipt of the acknowledgement message.

20 Claims, 7 Drawing Sheets

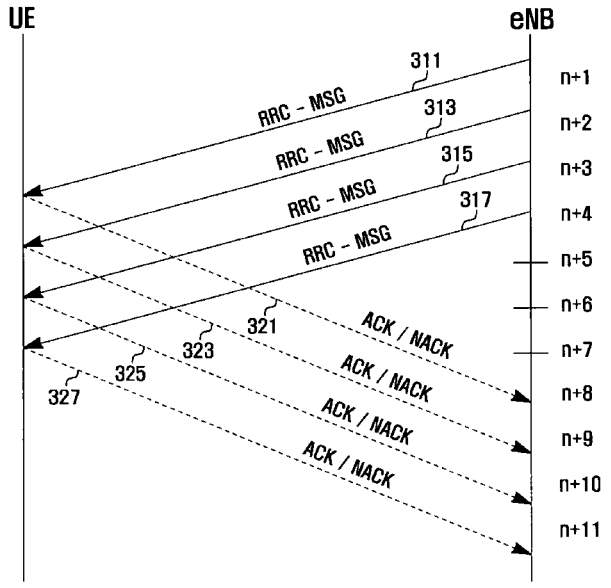


FIG . 1

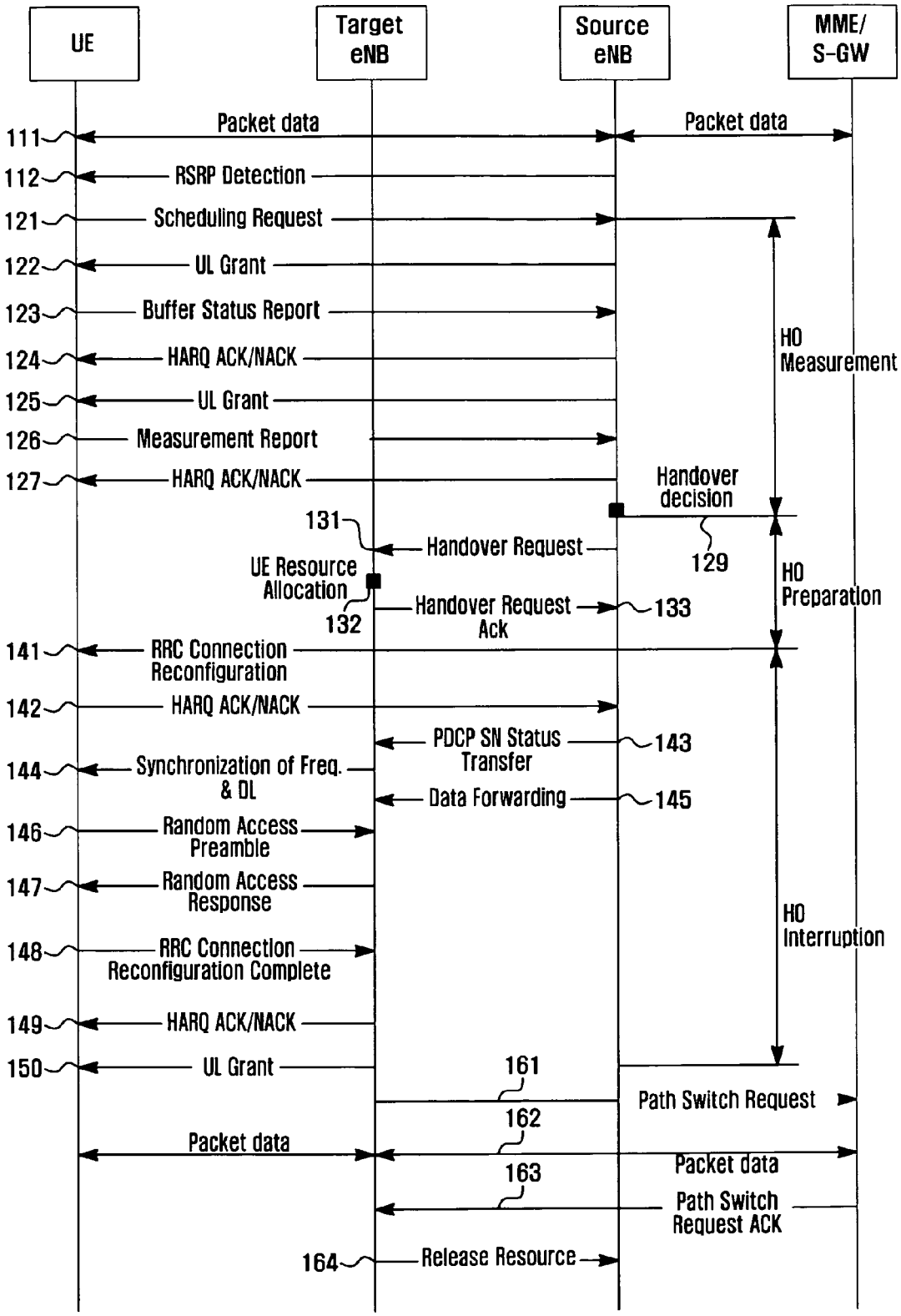

UE
Target eNB
Source eNB
MME/ S-GW
111 Packet data
Packet data
112 RSRP Detection
121 Scheduling Request
122 UL Grant
123 Buffer Status Report
124 HARQ ACK/NACK
125 UL Grant
126 Measurement Report
127 HARQ ACK/NACK
HO Measurement
Handover decision
129
131 Handover Request
UE Resource Allocation
132
Handover Request Ack
133
HO Preparation
141 RRC Connection Reconfiguration
142 HARQ ACK/NACK
PDCP SN Status Transfer
143
144 Synchronization of Freq. & DL
Data Forwarding
145
146 Random Access Preamble
147 Random Access Response
148 RRC Connection Reconfiguration Complete
HO Interruption
149 HARQ ACK/NACK
150 UL Grant
161
Path Switch Request
162
Packet data
Packet data
163
Path Switch Request ACK
164 Release Resource

FIG . 2

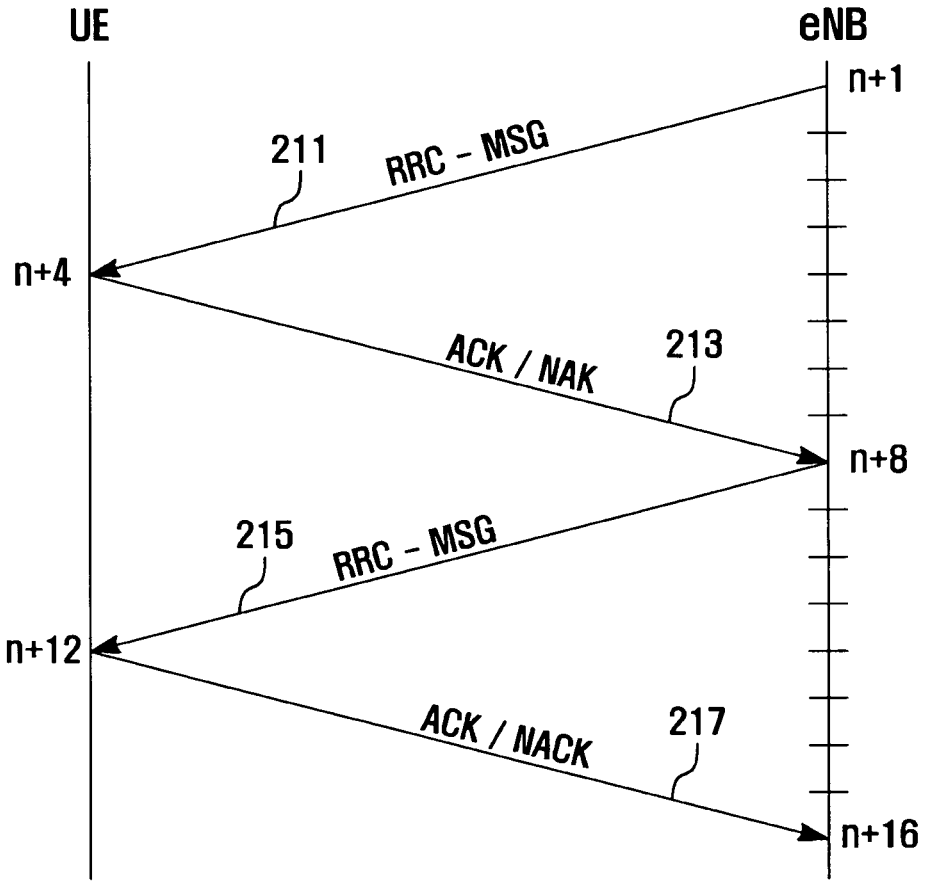
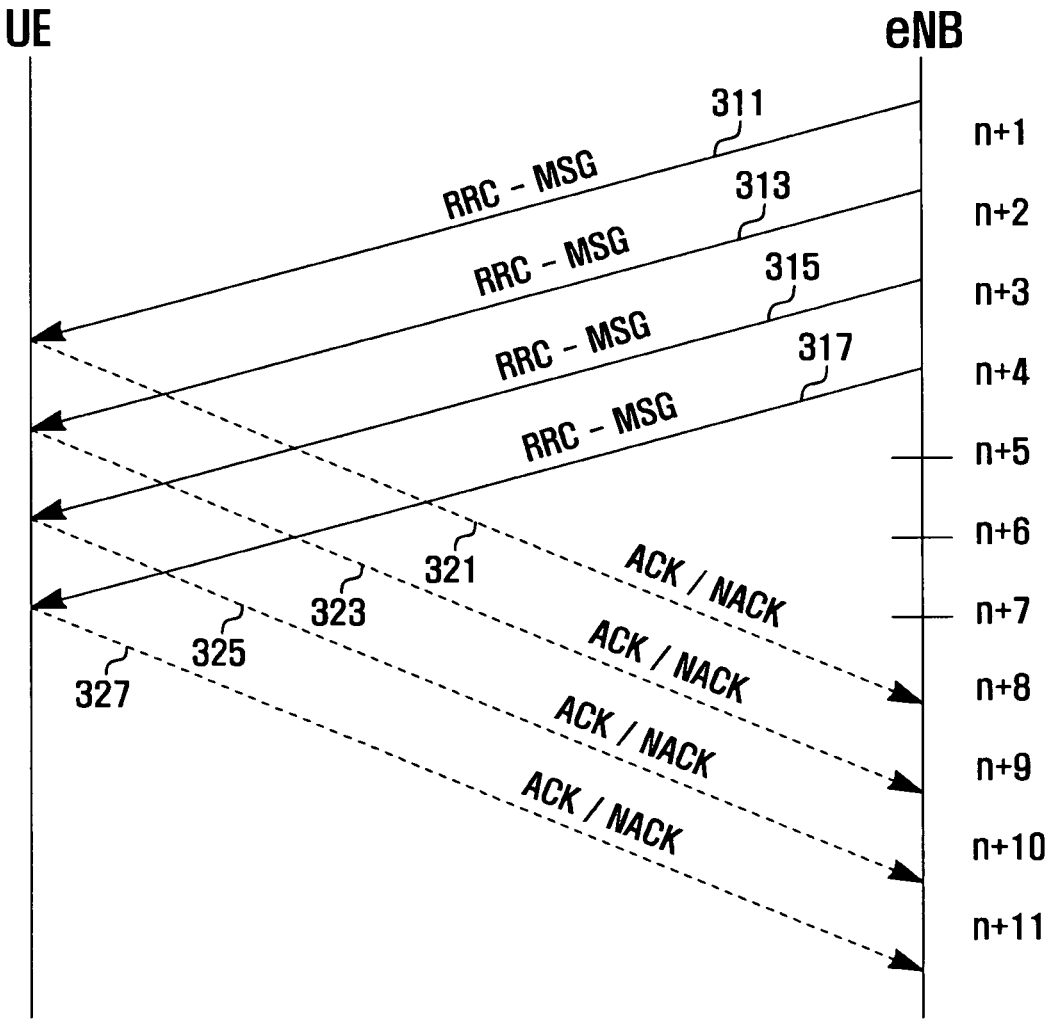

UE
eNB
n+1
211
RRC - MSG
n+4
ACK / NAK
213
n+8
215
RRC - MSG
n+12
ACK / NACK
217
n+16

FIG . 3


UE
eNB
311
RRC - MSG
313
RRC - MSG
315
RRC - MSG
317
RRC - MSG
321
323
325
327
ACK / NACK
ACK / NACK
ACK / NACK
ACK / NACK
n+1
n+2
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n+4
n+5
n+6
n+7
n+8
n+9
n+10
n+11

FIG . 4

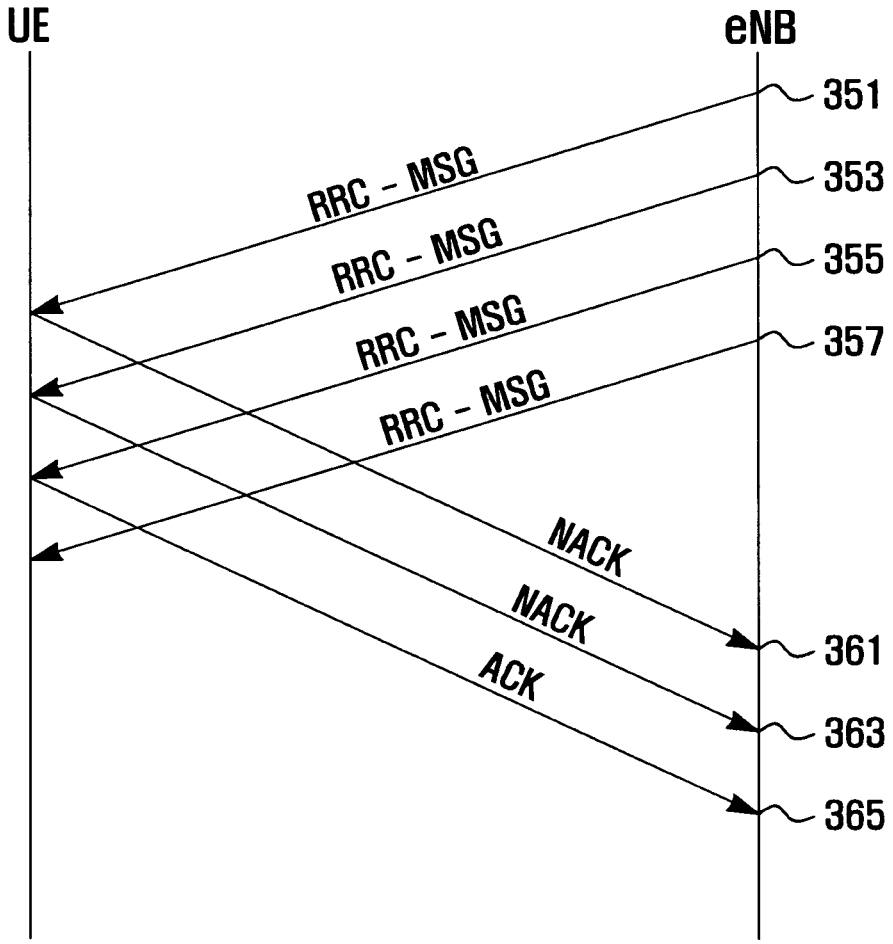

UE
eNB
351
RRC - MSG
353
RRC - MSG
355
RRC - MSG
357
RRC - MSG
NACK
NACK
ACK
361
363
365

FIG . 5

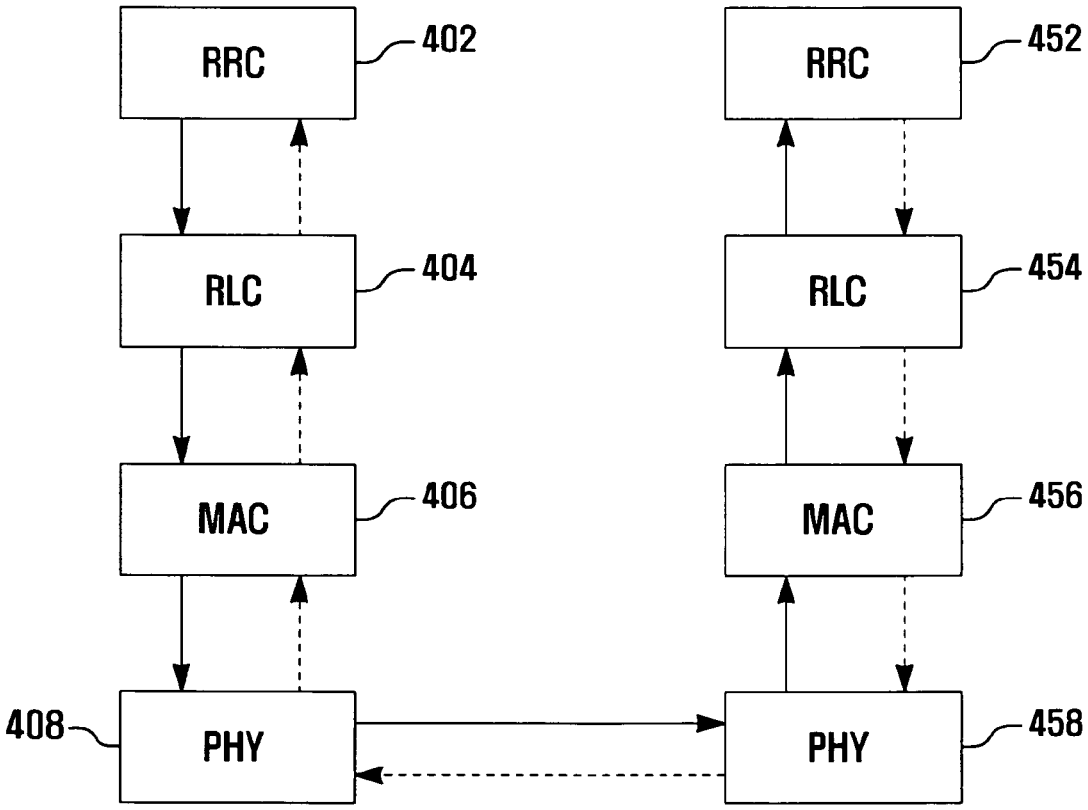


FIG . 6

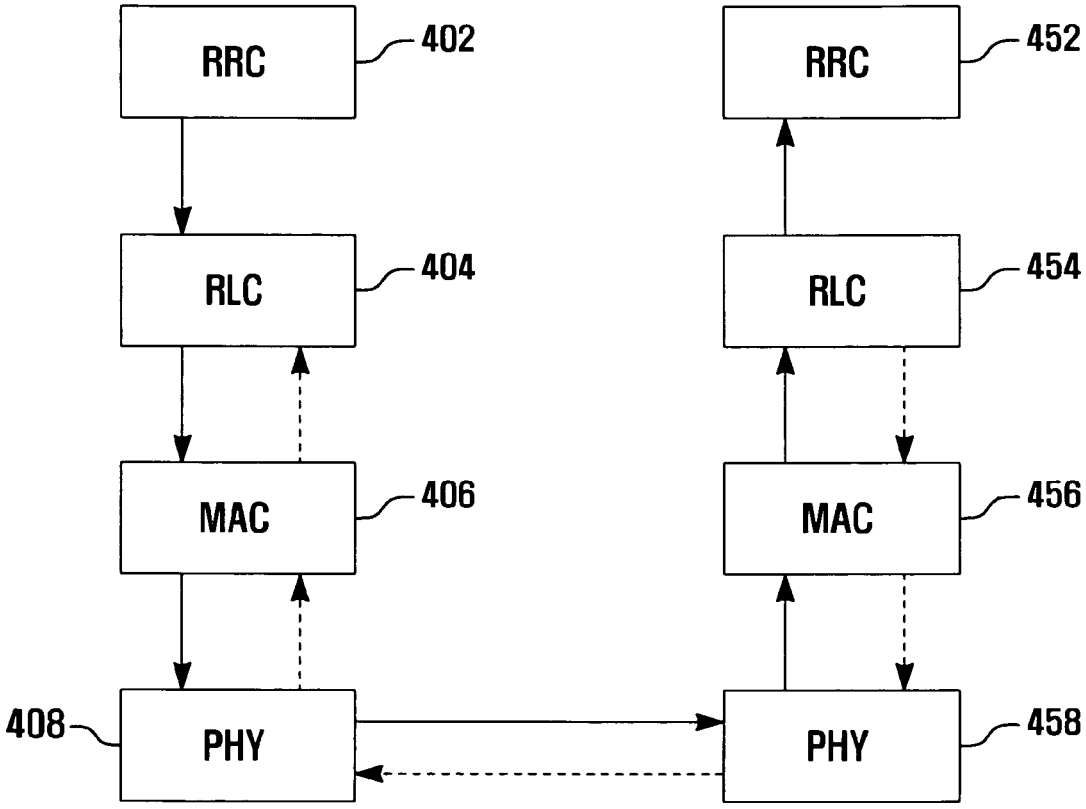
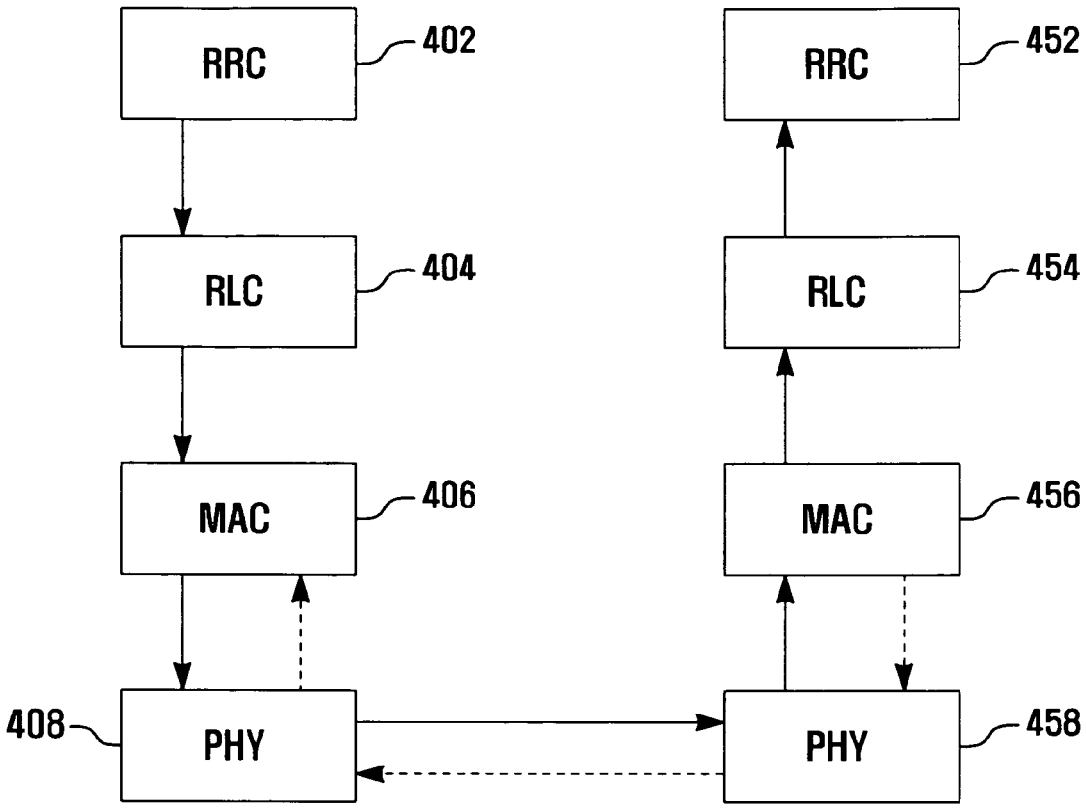


FIG . 7



RRC MESSAGE TRANSMISSION METHOD IN WIRELESS COMMUNICATION SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION(S) AND CLAIM OF PRIORITY

The present application is related to and claims priority to an application entitled "RRC MESSAGE TRANSMISSION METHOD IN WIRELESS COMMUNICATION SYSTEM" filed in the Korean Intellectual Property Office on Jan. 22, 2009 and assigned Serial No. 10-2009-0005351, the contents of which are incorporated herein by reference.

TECHNICAL FIELD OF THE INVENTION

The present invention relates to wireless communications and, in particular, to a Radio Resource Control (RRC) message transmission method and apparatus for a wireless communication system operating in TTI and acknowledge mode.

BACKGROUND OF THE INVENTION

In the wireless communication system operating in Transmission Time Interval (TTI) mode, the transmitter transmits a message at TTI, and the receiver performs Cyclic Redundancy Check (CRC) on the message received from the transmitter and reports the result to the transmitter. That is, the receiver in acknowledge mode determines whether the message has been received successfully and transmits an acknowledgement/negative acknowledgement (ACK/NACK) message to the transmitter based on the determination result.

In Long Term Evolution (LTE) system, Radio Resource Control (RRC) is responsible for controlling layer 3 signaling between User Equipment (UE) and evolved Node B (eNB), connection establishment and release, broadcast of system information, Radio Bearer establishment/reconfiguration and release, RRC connection mobility procedure, and the like. Typically, the RRC messages are exchanged in TTI mode, and the transmitter performs retransmission process depending on the response transmitted by the receiver.

A description is made of RRC message transmission procedure. FIG. **1** illustrates a sequence diagram of the operations of a UE and network entities for a handover procedure in an LTE system.

Referring to FIG. **1**, a UE is communicating packet data **111** with a source eNB. During the communication, the source eNB sends a Reference Signal Received Power (RSRP) Detection signal **112** to the UE. Upon receipt of the RSRP Detection signal, the UE performs a handover measurement procedure **121** to **129** with the source eNB. During the handover measurement procedure, the UE performs Scheduling Request, Buffer Status Report, and Measurement Report to the source eNB. The source eNB sends an ACK/NACK message to the source eNB in response to the individual messages.

If a handover decision has been made, the source eNB performs a handover preparation procedure **131** to **133** with a target eNB. In the handover procedure, the source eNB sends a Handover Request message **131** to the target eNB, and the target eNB sends a Handover Request ACK message to the source message.

Once the handover has been prepared, the source and target eNBs and UE perform a handover interruption procedure **141** to **150**. During the handover interruption procedure, the source eNB sends an RRC connection reconfiguration message to the UE and transfers a PDCP SN status message to the target eNB. The source eNB also forwards the data to the target eNB. After the establishment of a link between the UE and target eNB, the target eNB and the UE perform packet data communication. Thereafter, the target eNB sends a packet switch request message to a Mobility Management Entity/Source Gateway (MME/SGW) and performs then performs packet data communication with the UE.

In FIG. **1**, the messages **123**, **126**, **141**, and **148** are RRC messages transmitted in TTI mode, and the receiver sends an ACK/NACK message in response to the individual RRC messages. When a NACK message is received, the transmitter retransmits the corresponding message.

FIG. **2** illustrates a message flow diagram for an exchange of RRC messages and ACK/NACK messages between a UE and an eNB in a conventional wireless communication system operating in TTI mode. In FIG. **2**, the transmission party receives an ACK/NACK message in 8 TTIs after the transmission of an RRC message.

Referring to FIG. **2**, the eNB sends an RRC message **221** to the UE. If the RRC message has been received, the UE checks the normality of received RRC message and sends an ACK/NACK message **213** in response to the RRC message depending on the normality check result. The eNB receives the ACK/NACK message in 8 TTIs after the transmission of the RRC. If the received RRC message is abnormal, the UE sends the NACK message to the eNB in response to the RRC message. Upon receipt of the NACK message, the eNB, as the transmitter, retransmits the RRC message **215** and receives the ACK/NACK message **217** in another 8 TTIs after the retransmission of the RRC message.

Since the eNB and UE communicate with each other through a radio link, the message transmitted by the eNB or UE can be lost due to the radio link problem or bad communication condition. For example, if the RRC message transmitted at step **211** has been erroneous or lost, the eNB must retransmit the RRC message at step **215**, resulting in procedure delay of 8 TTIs. This means that the message loss causes the retransmission procedure delay equal to the time interval for retransmission in the periodical retransmission mode.

Assuming that the RRC message of FIG. **2** is the RRC connection reconfiguration message of FIG. **1** as a handover command and if the RRC connection reconfiguration message transmitted by the source eNB has been lost, the UE sends the NACK message to request the source eNB for the retransmission of the lost RRC message. Once the NACK message has been received, the source eNB retransmits the corresponding RRC message at a predetermined time, i.e., 8 TTIs after the initial transmission of the RRC message, resulting in handover interruption time.

There is therefore a need for a method to reduce the handover interruption time by minimizing the retransmission times of RRC message.

SUMMARY OF THE INVENTION

To address the above-discussed deficiencies of the prior art, it is a primary object to provide a RRC message transmission method that is capable of reducing the interruption time in a wireless communication system.

In accordance with an exemplary embodiment of the present invention, a message transmission method for a wireless communication system includes generating, at a transmitter, a message; transmitting the message two or more times consecutively from the transmitter to a receiver;

analyzing, at a receiver, the message transmitted by the transmitter; transmitting an acknowledge message or a negative-acknowledge from the receiver to the transmitter depending on the analysis result; and terminating, at the transmitter, a retransmission process of the message upon receipt of the acknowledgement message.

Preferably, transmitting the message includes generating duplicates of the RRC message on an RRC layer of the transmitter; and transmitting the duplicates of the RRC message consecutively through a physical layer by a Radio Link Control (RLC) layer or a Media Access Control (MAC) layer.

Preferably, transmitting the message includes generating, at an RRC layer of the transmitter, a consecutive transmission control information; transferring the RRC message with the consecutive transmission control information from the RRC layer to a Radio Link Control (RLC) layer; generating, at the RLC layer, duplicates of the RRC message based on the consecutive transmission control information; and transmitting, at the RLC layer, the duplicates of the RRC message to the receiver consecutively through a Media Access Control (MAC) and a Physical (PHY) layer.

Preferably, transmitting the message includes generating, at an RRC layer of the transmitter, a consecutive transmission control information; transferring the RRC message with the consecutive transmission control information from the RRC layer to a Radio Link Control (RLC) layer; transferring the RRC message with the consecutive transmission control information from the RLC layer to a Media Access Control (MAC) layer; generating, at the MAC layer, duplicates of the RRC message based on the consecutive transmission control information; and transmitting, at the MAC layer, the duplicates of the RRC message to the receiver consecutively through a Physical (PHY) layer.

In accordance with another exemplary embodiment of the present invention, a message transmission method of a user equipment (or base station) in a wireless communication system includes transmitting a message two or more times consecutively at a predetermined interval; receiving a reply at the predetermined interval in response to the message; and terminating, if the reply is an acknowledge message, a retransmission process of the message.

Before undertaking the DETAILED DESCRIPTION OF THE INVENTION below, it may be advantageous to set forth definitions of certain words and phrases used throughout this patent document: the terms "include" and "comprise," as well as derivatives thereof, mean inclusion without limitation; the term "or," is inclusive, meaning and/or; the phrases "associated with" and "associated therewith," as well as derivatives thereof, may mean to include, be included within, interconnect with, contain, be contained within, connect to or with, couple to or with, be communicable with, cooperate with, interleave, juxtapose, be proximate to, be bound to or with, have, have a property of, or the like; and the term "controller" means any device, system or part thereof that controls at least one operation, such a device may be implemented in hardware, firmware or software, or some combination of at least two of the same. It should be noted that the functionality associated with any particular controller may be centralized or distributed, whether locally or remotely. Definitions for certain words and phrases are provided throughout this patent document, those of ordinary skill in the art should understand that in many, if not most instances, such definitions apply to prior, as well as future uses of such defined words and phrases.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present disclosure and its advantages, reference is now made to the following description taken in conjunction with the accompanying drawings, in which like reference numerals represent like parts:

FIG. **1** illustrates a sequence diagram of the operations of a UE and network entities for a handover procedure in an LTE system;

FIG. **2** illustrates a message flow diagram for an exchange of RRC messages and ACK/NACK messages between a UE and an eNB in a conventional wireless communication system operating in TTI mode;

FIGS. **3** and **4** illustrate message flow diagrams for an exchange of RRC messages and ACK/NACK messages between a UE and an eNB in an RRC message transmission method according to an exemplary embodiment of the present invention;

FIG. **5** illustrates operations of a receiver and a transmitter for supporting an RRC message transmission method according to an exemplary embodiment of the present invention;

FIG. **6** illustrates operations of a receiver and a transmitter for supporting an RRC message transmission method according to another exemplary embodiment of the present invention; and

FIG. **7** illustrates operations of a receiver and a transmitter for supporting an RRC message transmission method according to another exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIGS. **3** through **7**, discussed below, and the various embodiments used to describe the principles of the present disclosure in this patent document are by way of illustration only and should not be construed in any way to limit the scope of the disclosure. Those skilled in the art will understand that the principles of the present disclosure may be implemented in any suitably arranged wireless communications system.

In the following description, the present invention provides a method for reducing transmission delay caused by RRC message retransmission. In an exemplary embodiment of the present invention, the same RRC message is retransmitted repeatedly to increase the reception probability at the receiver. This means to reduce the number of retransmissions of an RRC message in TTI mode.

In a wireless communication system according to the present invention, the RRC message transmission method can be implemented in three different ways. In one embodiment, the RRC entity of a transmitter transmits multiple duplicates of an RRC message and checks the ACK/NACK message transmitted by the receiver. In another embodiment, the RRC entity of the transmitter generates an RRC message having information on the consecutive transmission of the RRC message and a corresponding Radio Link Control (RLC) entity transmits multiple duplicates of the RRC message based on the consecutive transmission information and checks the ACK/NACK message transmitted by the receiver. In yet another embodiment, the RRC entity of the transmitter generates an RRC message with the information on the consecutive transmission and a corresponding Media Access Control (MAC) entity transmits multiple duplicates of the RRC message based on the consecutive transmission information and checks the ACK/NACK message transmitted by the receiver.

The RRC message transmission method according to an exemplary embodiment of the present invention processes

the duplicates of an RRC message as multiple consecutive RRC messages virtually and transmits the consecutive RRC messages within a period of one or more TTIs. The consecutive RRC message retransmission according to an exemplary embodiment of the present invention does not need to modify the other layers and procedures specified in the standard. The RRC (or RLC) entity of the transmitter checks the response message transmitted by the receiver and, if the RRC message has been received successfully at the receiver (i.e., the ACK message has been received), skips retransmission of the RRC message and drops the response message received after this. That is, the RRC (or RLC or MAC) entity stops retransmission of the RRC message upon receipt of the first ACK message transmitted in response to the RRC message.

FIGS. **3** and **4** illustrates message flow diagrams for an exchange of RRC messages and ACK/NACK messages between a UE and an eNB in an RRC message transmission method according to an exemplary embodiment of the present invention. In the exemplary embodiment of FIGS. **3** and **4**, the eNB is the transmitter and the UE is the receiver. However, the RRC message transmission method of the present invention can be applied when the UE is a transmitter and the eNB is a receiver. Although the RRC message is transmitted at an interval of TTI in FIGS. **3** and **4**, the transmission interval can be configured to more than one TTI. Although it is depicted that the RRC message is transmitted 4 times in FIGS. **3** and **4**, the number of the transmissions of the same RRC message can be configured to 2 to 8 times since the RRC message and the ACK/NACK message are exchanged at an interval of the 8 TTIs.

Referring to FIG. **3**, the eNB as the transmitter transmits the RRC message 4 times at TTI. That is, the eNB transmits the RRC message **311** and repeats the transmission of the RRC at TTI **313** to **317**. Accordingly, the UE as the receiver can receive the same RRC messages transmitted at steps **313** to **317**.

If the RRC message has been received, the UE transmits an ACK/NACK message depending on whether the RRC message is erroneous. That is, the UE analyzes the RRC message transmitted at step **311** and transmits, if the RRC message is received successfully, an ACK message and otherwise, a NACK message at step **321**. In this manner, the UE checks the RRC messages transmitted at steps **313** to **317** and transmits the ACK/NACK message in response to the corresponding RRC messages.

If an ACK message has been received, this means that the RRC message is successfully and thus the eNB ignores the ACK/NACK messages following the ACK message. That is, if it has been detected that the UE received the RRC message successfully by means of the ACK message, the eNB terminates the retransmission process upon receipt of the ACK message.

Referring to FIG. **4**, the eNB as the transmitter transmits the same RRC message 4 times at TTI **351**, **353**, **355**, and **357**). In the example of FIG. **4**, the RRC message transmitted at steps **351** and **353** are erroneous and the RRC message transmitted at step **355** is delivered to the UE successfully. Accordingly, the UE transmits the NACK messages to the eNB in response to the individual RRC messages **361** and **363**. The eNB receives all of the 4 ACK/NACK messages transmitted by the UE in response to the RRC messages and then determines whether to retransmit the RRC message depending on analysis result about the 4 ACK/NACK messages. Since the ACK message has been received in response to the RRC message transmitted at step **355**, the eNB recognizes that the UE received the RRC message successfully **365**.

Accordingly, the eNB stops retransmission process upon receipt of the ACK message at step **365**. In this manner, the transmitter transmits the same RRC message multiple times and, if at least one of the multiple transmissions of the same RRC message is responded by means of the ACK message, the transmitter stops retransmission process, thereby reducing the RRC message retransmission delay and improving the service quality.

FIG. **5** illustrates operations of a receiver and a transmitter for supporting an RRC message transmission method according to an exemplary embodiment of the present invention. In the exemplary embodiment of FIG. **5**, an eNB transmits an RRC message, and a UE receives the RRC message transmitted by the eNB and transmits an ACK/NACK message in response to the RRC message.

The radio protocol stack of the LTE system includes a Radio Resource Control (RRC) layer, a Radio Link Control (RLC) layer, a Media Access Control (MAC) layer, and a Physical (PHY) layer. As shown in FIG. **5**, the eNB includes an RRC entity **402**, an RLC entity **404**, a MAC entity **406**, and a PHY entity **408**; and the UE includes an RRC entity **452**, an RLC entity **454**, a MAC entity **456**, and a PHY entity **458**.

The RRC entities **405** and **452** control layer 3 are responsible for signaling between the eNB and the UE, link connection and release, broadcast of system information, establishment/modification/release of radio bearers, and RRC connection mobility procedures. The RLC entities **404** and **454** are responsible for segmentation of the RRC packets transferred by the corresponding RRC entities **402** and **452** into Protocol Data Units (PDUs) in size appropriate for Automatic Repeat Request (ARQ) operation. The MAC entities **406** and **456** are connected to multiple RLC entities to multiplex the RLC PDUs to be transmitted into MAC PDUs and demultiplex the received MAC PDUs into RLC PDUs. The PHY entities **408** and **458** are responsible for performing channel coding and modulation on the MAC PDUs to be transmitted and transmit the OFDM symbols over the radio channel and performing channel demodulation and decoding on the received OFDM symbols and deliver the decoded MAC PDUs to the MAC entities **406** and **456**.

In FIG. **5**, the RRC entity **402** generates multiple duplicates of an RRC message and transfers the duplicates of the RRC message to the RLC entity. The solid line arrows denote the paths of the RRC message transmitted by the transmitter (i.e., the eNB in FIG. **5**), and the dotted line arrows denote the paths of the ACK/NACK message transmitted by the receiver (i.e., the UE in FIG. **5**).

The RRC entity **402** of the eNB transmits the RRC message via the RLC entity **404**, the MAC entity **406**, and the PHY entity **408**; and the RRC entity **452** of the UE receives the RRC message via the PHY entity **458**, the MAC entity **456**, and the RRC entity **454**. Here, the RRC message is transmitted repeatedly at TTI (or at an interval of two or more TTIs) as shown in FIG. **3**. That is, the RRC entity **402** transfers the duplicates of the RRC message to the lower layer (i.e., RLC entity).

The RRC entity **452** of the UE checks the duplicates of the RRC message received in series and determines whether the RLC message has been received normally. If the RRC message has been received normally, the RRC entity **452** transfers an ACK message to the lower layers. Otherwise, if the RRC message has been received abnormally, the RRC

entity **452** transfers a NACK message to the lower layers. The ACK/NACK message is transmitted in the reverse order of the RRC message as denoted by the dotted line arrows so as to be received by the RRC entity **402** of the eNB. The RRC entity **402** of the eNB may receive multiple ACK/NACK messages in response to the duplicates of the RRC message. If an ACK message has been received, this means that the UE has received the RRC message and thus the RRC entity **402** of the eNB stops the retransmission process. Only if all the ACK/NACK messages received in response to the duplicates of the RRC message have been NACK messages, the RRC entity **402** of the eNB performs retransmission.

FIG. **6** illustrates operations of a receiver and a transmitter for supporting an RRC message transmission method according to another exemplary embodiment of the present invention. In the exemplary embodiment of FIG. **6**, an eNB transmits an RRC message, and a UE receives the RRC message transmitted by the eNB and transmits an ACK/NACK message in response to the RRC message.

In FIG. **6**, the RRC entity **402** of the eNB generates and transfers an RRC message to the RLC entity **404**, and the RLC entity **404** generates multiple duplicates of the RRC message to be transmitted to the UE. The RRC entity **402** of the eNB transfers the RRC message with consecutive transmission control information to the lower layer, i.e., the RLC entity **404**. If the RRC message with the consecutive transmission control information has been received, the RLC entity **404** reserves the TTIs virtually as if multiple RRC messages are received from the RRC entity **402** in series based on the consecutive transmission control information. Thereafter, the RLC entity **404** transmits the RRC message preset number of times (e.g., 4 times as shown in FIG. **3**) at TTI and thus the RRC message is delivered to the RRC entity **452** of the UE through the path as denoted by the solid line arrows repeatedly.

The RLC entity **454** of the UE analyzes the RRC messages received at TTI to evaluate the normality of the RRC message. If the RRC message has been received normally in a TTI, the RLC entity **454** transfers an ACK message to the lower layers. Otherwise, if the RRC message has been received abnormally, the RLC entity **454** transfers a NACK message to the lower layers. The ACK/NACK message is delivered to the RLC entity **404** of the eNB through the path as denoted by the dotted line arrows. The RLC entity of the eNB may receive the NACK messages up to the number of the RRC message transmissions. If an ACK message has been received in a TTI, this means that the UE has received the RRC message normally and thus the RLC entity **404** of the eNB stops the retransmission process. That is, the RLC entity **404** of the transmitter performs retransmission of the corresponding RRC message only when the NACK messages as many as the number of consecutive transmissions of the same RRC message.

FIG. **7** illustrates operations of a receiver and a transmitter for supporting an RRC message transmission method according to another exemplary embodiment of the present invention. In the exemplary embodiment of FIG. **7**, an eNB transmits an RRC message, and a UE receives the RRC message transmitted by the eNB and transmits an ACK/NACK message in response to the RRC message.

In FIG. **7**, the RRC entity **402** of the eNB generates and transfers an RRC message with consecutive transmission control information to the RLC entity **404**, and the RLC entity **404** transfers the RRC message with the consecutive transmission control information to the MAC entity **406**. If the RRC message with the consecutive transmission control information has been received, the MAC entity **406** reserves the TTIs virtually as if multiple RRC messages are received from the RRC entity **402** in series base on the consecutive transmission control information. Thereafter, the MAC entity **406** transmits the RRC message preset number of times at TTI and thus the RRC message is delivered to the RRC entity **452** through the path as denoted by the solid line arrows repeatedly.

The MAC entity **456** of the UE analyzes the RRC messages received at TTI to evaluate the normality of the RRC message. If the RRC message has been received normally in a TTI, the MAC entity **456** transfers an ACK message to the lower layer. Otherwise, if the RRC message has been received abnormally in a TTI, the MAC entity **456** transfers a NACK message to the lower layer. The ACK/NACK message is delivered to the MAC entity **406** of the eNB through the path as denoted by the dotted line arrows. The MAC entity of the neb may receive the NACK messages up to the number of the RRC message transmissions. If an ACK message has been received in a TTI, this means that the UE has received the RRC message normally and thus the MAC entity **406** of the eNB stops the retransmission process. That is, the MAC entity **406** of the transmitter performs retransmission of the corresponding RRC message only when the NACK messages as many as the number of consecutive transmissions of the same RRC message.

As described above, the RRC message transmission method of the present invention is advantageous to reduce the interruption time by minimizing the retransmission times of RRC message.

Although the present disclosure has been described with an exemplary embodiment, various changes and modifications may be suggested to one skilled in the art. It is intended that the present disclosure encompass such changes and modifications as fall within the scope of the appended claims.

What is claimed is:

1. A message reception method of a receiver in a wireless communication system, the method comprising:

receiving a message at least two times from a transmitter in the wireless communication system based on a predetermined transmission time interval; and

transmitting an acknowledgment message or a negative-acknowledgment message at least two times to the transmitter in response to the message received at least two times respectively,

wherein the transmitter is adapted to transmit the message at least two times until the acknowledgment message is received from the receiver, and

wherein the transmitter is adapted to drop the acknowledgment message or the negative-acknowledgment message in response to the message received after a first acknowledgment message in response to the message is received by the transmitter.

2. The message reception method of claim **1**, wherein the message is a Radio Resource Control (RRC) message.

3. The message reception method of claim **2**, wherein the message is received at a number of Transmission Time Intervals (TTIs).

4. The message reception method of claim **2**, wherein the transmitter is a base station and the receiver is a mobile station.

5. The message reception method of claim **2**, wherein the message is generated by:

generating duplicates of the RRC message on an RRC layer of the transmitter; and

transmitting the duplicates of the RRC message consecutively through a physical layer by a Radio Link Control (RLC) layer or a Media Access Control (MAC) layer.

6. The message reception method of claim **2**, wherein the message is generated by:

generating, at an RRC layer of the transmitter, a transmission control information;

transferring the RRC message with the transmission control information from the RRC layer to a Radio Link Control (RLC) layer;

generating, at the RLC layer, duplicates of the RRC message based on the transmission control information; and

transmitting, at the RLC layer, the duplicates of the RRC message to the receiver consecutively through a Media Access Control (MAC) layer and a Physical (PHY) layer.

7. The message reception method of claim **2**, wherein the message is generated by:

generating, at an RRC layer of the transmitter, a transmission control information;

transferring the RRC message with the transmission control information from the RRC layer to a Radio Link Control (RLC) layer;

transferring the RRC message with the transmission control information from the RLC layer to a Media Access Control (MAC) layer;

generating, at the MAC layer, duplicates of the RRC message based on the transmission control information; and

transmitting, at the MAC layer, the duplicates of the RRC message to the receiver consecutively through a Physical (PHY) layer.

8. A message transmission method of a transmitter in a wireless communication system, the method comprising:

transmitting a message to a receiver in the wireless communication system, wherein the message is transmitted at least two times based on a predetermined transmission time interval;

receiving an acknowledgment message or a negative-acknowledgement message at least two times in response to the message transmitted at least two times respectively, wherein the message is transmitted at least two times to the receiver until the acknowledgement message is received from the receiver; and

dropping, by the transmitter, the acknowledgment message or a negative-acknowledgment message in response to the message received after a first acknowledgment message in response to the message is received from the receiver.

9. The message transmission method of claim **8**, wherein the message is a Radio Resource Control (RRC) message, and the predetermined interval is an integer multiple of a Transmission Time Interval (TTI).

10. The message transmission method of claim **8**, wherein the transmitter is a base station and the receiver is a mobile station.

11. The message transmission method of claim **9**, wherein transmitting the message comprises:

generating duplicates of the RRC message on an RRC layer of the transmitter; and

transmitting the duplicates of the RRC message consecutively through a physical layer by a Radio Link Control (RLC) layer or a Media Access Control (MAC) layer.

12. The message transmission method of claim **9**, wherein transmitting the message comprises:

generating, at an RRC layer of the transmitter, a transmission control information;

transferring the RRC message with the transmission control information from the RRC layer to a Radio Link Control (RLC) layer;

generating, at the RLC layer, duplicates of the RRC message based on the transmission control information; and

transmitting, at the RLC layer, the duplicates of the RRC message to the receiver consecutively through a Media Access Control (MAC) layer and a Physical (PHY) layer.

13. The message transmission method of claim **9**, wherein transmitting the message comprises:

generating, at an RRC layer of the transmitter, a transmission control information;

transferring the RRC message with the transmission control information from the RRC layer to a Radio Link Control (RLC) layer;

transferring the RRC message with the transmission control information from the RLC layer to a Media Access Control (MAC) layer;

generating, at the MAC layer, duplicates of the RRC message based on the transmission control information; and

transmitting, at the MAC layer, the duplicates of the RRC message to the receiver consecutively through a Physical (PHY) layer.

14. A terminal capable of communicating in a wireless communication system, the terminal comprising:

a transmitter configured to transmit a message at least two times based on a predetermined transmission time interval;

a receiver configured to receive an acknowledgment message or a negative-acknowledgment message at least two times in response to the message transmitted at least two times respectively; and

a controller configured to control the transmitter and the receiver and to drop the acknowledgment message or a negative-acknowledgment message in response to the message received after a first acknowledgment message in response to the message is received, wherein the message is transmitted at least two times until acknowledgment message is received.

15. The terminal of claim **14**, wherein the message is a Radio Resource Control (RRC) message.

16. The terminal of claim **15**, wherein the predetermined interval is a Transmission Time Interval (TTI).

17. The terminal of claim **14**, wherein the terminal is one of a base station and a mobile station.

18. The terminal of claim **14**, wherein:

the controller is configured to generate duplicates of the RRC message on an RRC layer of the transmitter; and

the transmitter is configured to transmit the duplicates of the RRC message consecutively through a physical layer by a Radio Link Control (RLC) layer or a Media Access Control (MAC) layer.

19. The terminal of claim **14**, wherein the controller is configured to:

generate, at an RRC layer, a transmission control information;

transfer the RRC message with the transmission control information from the RRC layer to a Radio Link Control (RLC) layer;

generate, at the RLC layer, duplicates of the RRC message based on the transmission control information; and

transmit, at the RLC layer, the duplicates of the RRC message to the receiver consecutively through a Media Access Control (MAC) layer and a Physical (PHY) layer.

20. The terminal of claim **14**, wherein the controller is configured to:

generate, at an RRC layer of the transmitter, a transmission control information;

transfer the RRC message with the transmission control information from the RRC layer to a Radio Link Control (RLC) layer;

transfer the RRC message with the transmission control information from the RLC layer to a Media Access Control (MAC) layer;

generate, at the MAC layer, duplicates of the RRC message based on the transmission control information; and

transmit, at the MAC layer, the duplicates of the RRC message to the receiver consecutively through a Physical (PHY) layer.

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